

P22019.A03

Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

1. (Previously Presented) An apparatus for measuring the thickness of a material using the focal length of a lensed fiber comprising:

a piezo Electric Transducer (PZT) which moves vertically against the material to be measured;

a lensed fiber which is attached to said PZT for emitting a Gaussian beam;

a laser for emitting a beam source;

a beam shutter for stopping the beam output returning;

a 3dB optical fiber coupler for separating the beam strength from said lensed fiber and laser by 50:50;

a beam detector for detecting reflected beam strength from the end of said lensed fiber;

a RC filter for filtering said detected beam;

a microprocessor for analyzing said detected beam strength;

an amplifier for amplifying the strength of electric signals according to the control of said microprocessor;

P22019.A03

a PZT driver for driving PZT according to the strength of electric signals amplified by said amplifier;

a X-Y axis scanner driver for driving a X-Y axis scanner according to the control of said microprocessor;

a X axis scanner for driving the X axis according to the driving of the X-Y axis scanner; and

a Y axis scanner for driving the Y axis according to the driving of the X-Y axis scanner.

2. (Currently Amended) A method for measuring ~~the~~ a thickness of a material using ~~the~~ a focal length of a lensed fiber, ~~wherein said lensed fiber generates a form of Gaussian Beam and is attached to PZT in order to detect the quantity of beam while the lensed fiber is moved vertically against the material to be measured~~ the method comprising:
generating a Gaussian beam by transmitting light to a convex surface of the lensed fiber to focus the Gaussian beam;

receiving the Gaussian beam reflected from the material with the lensed fiber moving vertically with respect to the material;

detecting the reflected Gaussian beam using a detector at the lensed fiber;

calculating a reflected Gaussian beam strength using a microprocessor; and

measuring the thickness of the material by calculating a difference among maximal points of the reflected Gaussian beam strength.

3. (Previously Presented) The apparatus as claimed in Claim 1, wherein the thickness of said material is measured by using a lensed fiber whose focal length is longer than the beam coherent length of the beam.

4. (Original) The apparatus as claimed in Claim 1, wherein the thickness of said material is measured by squaring of the difference between the average values of interference patterns and the actual interference.

5. (Currently Amended) The method as claimed in Claim 2, wherein instead of the lensed fiber, a ~~normal~~ lens is used for measuring the thickness of the material.

6. (Currently Amended) The apparatus as claimed in Claim 1, wherein the thickness of ~~said the~~ material is measured ~~by using the fact that~~ based upon the strength of the reflected beam from the surface of the material ~~has~~ having two peak values.

P22019.A03

7. (Original) The apparatus as claimed in Claim 1, wherein if said material has multiple layers then the thickness of each layer is measured from the peak value of the reflected beam for each corresponding layer.

8. (Currently Amended) The apparatus as claimed in Claim 1, wherein instead of the lensed fiber, a ~~normal~~ lens is used for measuring the thickness of the material.

9. (Currently Amended) The apparatus as claimed in Claim 3, wherein instead of the lensed fiber, a ~~normal~~ lens is used for measuring the thickness of the material.

10. (Currently Amended) The apparatus as claimed in Claim 4, wherein instead of the lensed fiber, a ~~normal~~ lens is used for measuring the thickness of the material.